UNIVERSITY OF WASHINGTON

ARBORETUM BULLETIN

Published Quarterly by the Arboretum Foundation

SUMMER, 1975

BOOT FOUNDATION
SWARTHMORE COLLEGE
SWARTHMORE, PA.

THE ARBORETUM BULLETIN

Vol. XXXVIII, No. 3
Seattle, Wa., Summer, 1975

PRESIDENT'S MESSAGE

Another important step has been taken in the initiation of a long-range plan for the future development and operation of the Arboretum. A steering committee of seven members has been appointed by the President of the University of Washington, the Mayor of the City of Seattle and the Governor of the State of Washington, and has held its initial meeting.

Hopefully the appointments will provide the Arboretum, as a long-term asset, with the long-range objectives and plans which have historically been so difficult to develop with both the state and city legislative and budget emphasis focused on the succeeding one or two year periods.

I am very pleased that the membership of the Foundation is represented on this committee, thus recognizing this organization's consistent role as a major supporter of the Arboretum.

The Foundation is well prepared to present its views to the Committee, and has substantial financial support available to help accomplish the realization of the Arboretum's potential as a public asset of major importance.

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THE UNIVERSITY OF WASHINGTON
Arboretum bulletin

VOLUME XXXVIII, NUMBER 3
Summer, 1975

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COVER PHOTO:

Romneya coulteri
(See p. 26)
Photo: B. O. Mulligan

Insects and Insecticides

*ROBERT I. GARA**

The Problem

Insects are unique creatures. Besides certain basic distinguishing features — six legs, one pair of antennae and the ability of most adults to fly — they are equipped with flexible suits of armor called exoskeletons. These exoskeletons provide protection and remarkable mobility; one is reminded of a superbly designed mechanical toy.

Insects also have the evolutionary advantage of having been around for a long time. Fossil insects over 300 million years old have been found in geological deposits. Although we know that insects are even older than their fossilized remains, prior to this time their trail becomes dim.

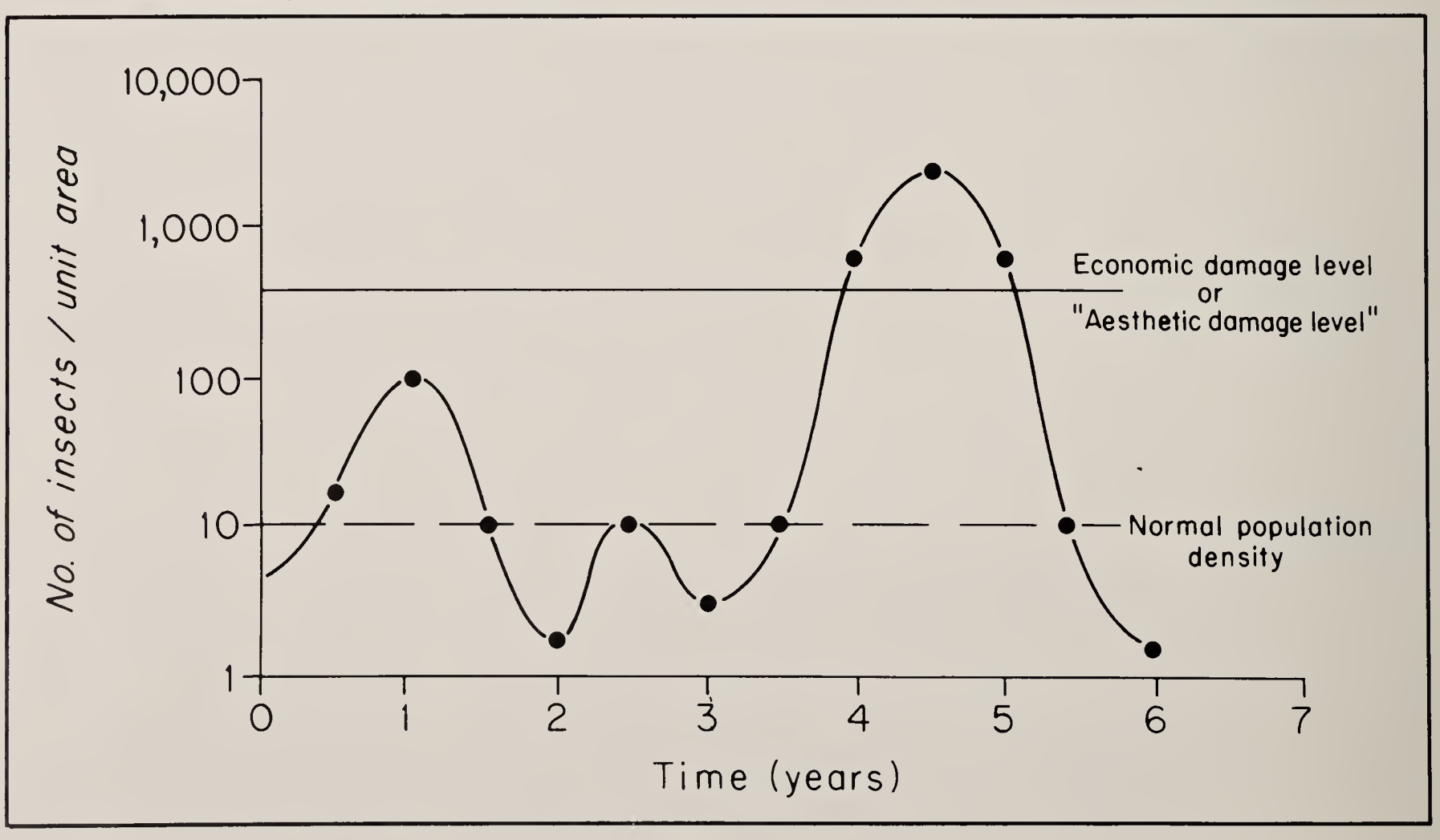
In any case, when we consider their ancient age coupled with a prodigious ability to reproduce, it is not hard to see why 80 percent of all animal species are insects. The number of individual insects alive at any time is exceeded only by microscopic life forms. The adaptability of insects has been extraordinary; they can be found nearly everywhere on earth, in every kind of local condition. Thus, although man over the past few centuries has dominated the environment (think of his extinction of vast vertebrate populations), insects have suddenly loomed up as his main competitor for food and fiber.

Control

Fortunately, natural control factors such as weather, competition for food and space, and natural enemies usually keep insect populations down to tolerable levels. When natural controls relax, however, it may become necessary to control insect pests artificially. Direct control generally involves the use of chemical poisons and is introduced whenever the impact of an insect population reaches a level of economic damage (Figure 1). Such levels are established by our

*Dr. Gara is Professor of Forest Entomology, College of Forest Resources, University of Washington. This is the first of two articles dealing with insects and plants.

Figure 1. Fluctuations of a hypothetical insect, showing its normal population level and when it temporarily exceeds its normal density and becomes a pest.



standard of living and our aesthetic sense. In agriculture, the level of economic damage has been lowered as a result of the consumer's increased demand for unblemished fruits and vegetables. A home gardener's personal desires would determine a damage level for that situation. For example, a hypothetically perfect rhododendron garden with not a single damaged leaf would have an extremely low "aesthetic damage threshold" calling for continuous direct control.

Insecticides

Insecticides are classed according to how they kill the pest. The first insecticides developed destroyed insects by precipitating the secretory cells in the insect's digestive tract. Included among these poisons are the arsenicals, fluoroscilicates, even sulfur. An ecological benefit of such chemicals is that, in order to kill, they must be ingested. Parasites and predators are not affected.

Another group of early insecticides are called "botanicals" because they are extracted from plants. These are nerve poisons like pyrethrum, from a chrysanthemum-like plant; rotenone, a root extract of the derris plant; and nicotine from tobacco. Because of extreme toxicity to mammals of some (i.e., nicotine), they are not in widespread use; additionally, rotenone is imported and is therefore quite expensive. But a positive aspect of the botanicals is that they penetrate the exoskeleton and do not need to be ingested to kill the insect. Also, they are short-lived, lasting only hours or days, so there is currently considerable interest in synthesizing pyrethroid insecticides. Although they have not been perfected yet (e.g., some are deactivated by ultraviolet radiation), these synthetic pyrethroids may be the insecticides of the future.

Farmers and growers in recent times became interested in having longer lasting synthetic insecticides which would protect plants against insects for several weeks. During this period, pests that attacked the plants would be killed as they crawled into contact with the residual film of pesticide deposited on the plant surface.

The first residual contact insecticides were the chlorinated hydrocarbon nerve poisons — DDT, Lindane or BHC, Aldrin, Dieldrin, and others. These chemicals are not highly toxic to mammals, but many are extremely persistent and remain in the environment for protracted periods, even years. They are hazardous because they accumulate and are magnified in the food chains of predatory animals like hawks and eagles.

A second series of residual contact insecticides are the organophospates, which include Parathion, Malathion, TEPP, Metasystox, Diazanon, and many others. As with the chlorinated hydrocarbons, the organophosphates are non-specific, affecting various life forms but tending to be more toxic to insects and man. Unlike the hydrocarbons, they last only a few days. These toxicants combine with the enzyme acetylcholinesterase to cause constant stimulation of all nerves; the poisoned animal actually "flutters to death" (tetanic paralysis).

A third group of residual contact insecticides, the carbamates, appeared in the 1960's. They fall between the chlorinated hydrocarbons and the organophosphates on scales of persistence and toxicity, and like the latter chemicals, they are acetylcholinesterase inhibitors. Sevin is the most popular carbamate.

Several carbamates and some organophosphates have systemic properties, which means they are absorbed through plant roots and leaves and translocated in the sap. This characteristic makes systemics especially effective against aphids and other sap suckers and keeps the plant surface safe for other insects — parasites, predators, and pollinators.

The toxicities to mammals of different pesticides are determined by measuring the amount (in milligrams) per body weight (in kilograms) needed to kill 50% (LD_{50}) of a test animal population (e.g., rats and guinea pigs). As shown in Table 1, these classifications are determined for both oral and dermal (i.e., through the skin) doses; present day use of several of these toxicants is either banned or extremely restricted by state and federal regulations.

Formulations

It would be too expensive and hazardous to sell the pure insecticide. Therefore, insecticides are sold as formulations. Some of the common forms are dusts, wettable powders, and emulsifiable concentrates. Dusts contain a toxicant diluted in chemically inert clay; the combination is then applied directly to plants. Wettable powders are dispersed by water; thus, the formula-

Table 1 — Hazard data on selected insecticides

Insecticide	Class	LD_{50} (mg/kg) Oral	Dermal	Danger Class*
Aldrin	Chl. Hyd. C.	39	98	2
Baygon	Carb.	83	>2,400	2
Lindane (BHC)	Chl. Hyd. C.	600	—	3
Chlorodane	Chl. Hyd. C.	335	840	3
DDT	Chl. Hyd. C.	217	2,510	4
Diazion	Org. Phosph.	250	900	3
Dieldrin	Chl. Hyd. C.	46	90	2
Gardona	Org. Phosph.	1,100	>4,000	4
Lead Arsanate	Misc.	1,050	>2,400	3
Malathion	Org. Phosph.	1,375	>4,444	4
Methoxychlor	Chl. Hyd. C.	—	>6,000	4
Meta-Systox-R	Org. Phosph.	47	173	3
Mirex	Chl. Hyd. C.	740	>2,000	4
Nicotine	Misc.	83	285	2
Parathion	Org. Phosph.	13	21	1
Pyrethrum	Misc.	200	>1,800	4
Sevin	Carb.	850	>4,000	4
Systox	Org. Phosph.	6.2	14	1

*Danger Class: 1, most dangerous; 2, dangerous; 3, less dangerous; 4, least dangerous. (Oregon Insect Control Handbook. O.S.U., Corvallis. 221 pp. 1975.)

tions include the toxicant diluted in inert clay plus a surfactant, a compound which allows the clay-toxicant to become microscopically suspended in water. This liquid suspension is applied to the crop. Similarly, emulsifiable concentrates are mixed in water and dispersed. A formulation of this type includes the insecticide dissolved in oil and an emulsifying agent that lets the insecticide-oil solution mix with water. Emulsifiable concentrates are the most common formulations available to the home gardener — the material that comes in the "little brown bottle."

There are two excellent publications on the control of insect pests available to the serious gardener. One is the WSU Chemical Insect Control Handbook, the other the Oregon Insect Control Handbook. The latter publication perhaps is more useful to the layman and is available for $5.00 from the Extension Service, Oregon State University, Corvallis, Oregon.

Acknowledgment

I thank Ms. Gretchen Furber for her review of the manuscript.

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Master Gardeners:
A Plant's Best Friend

SHARON COLLMAN

Between now and November 15, 1975 the Washington State University Cooperative Extension Service in Benton, Island, King, Kitsap, Pierce, Snohomish, Spokane, and Whatcom Counties is accepting applications of experienced home gardeners who are eager to serve, unpaid, as volunteer gardening experts at Extension Plant Problem Clinics established in local libraries and major shopping centers. Selected applicants will be given intensive training in plant problem-diagnosing techniques, plant culture, pest control techniques and recent legislation governing the use of pesticides. This training will be held from 9AM to 4PM, one day per week, for about 11 weeks beginning in January, 1976 and ending in mid-March, 1976. Graduates, known as "Master Gardeners," will join veteran Master Gardener volunteers from the past three years in answering all kinds of gardening questions and diagnosing plant problems using specimens brought to them by local home gardeners. They will be expected to staff their assigned Plant Problem Clinic once a week during the April through September season. While "Master Gardeners" in the past three years have been able to give on-the-spot diagnoses and solutions for a large number of their customers, W.S.U. Extension Research Specialists and facilities are available to assist them within a few days on problems requiring laboratory examination. In addition to their initial training and service in clinics, "Master Gardeners" gain further knowledge by sharing their experience and attending advanced training seminars held throughout the year. Many find the experience very rewarding and return to serve as volunteers year after year.

Since the Master Gardener Program began as a pilot project in King County in 1972 it has grown considerably. With the backing of W.S.U. research and Extension publications, volunteers are providing easy access to free, unbiased information and bulletins for thousands of local home gardeners in their communities. The concept of using volunteer para-professionals to make extension information more easily available to county residents has been met with great interest in increasingly more counties and states.

Master Gardener Plant Clinic schedules, available April-September at most libraries and Cooperative Extension offices in Washington, are easy to spot. Just watch for the *bright* yellow flyers and signs! Persons with a strong interest in gardening, who live in one of the eight Washington Counties where W.S.U. Master Gardener Programs are operating, may request an application to serve as a "Master Gardener" by sending a postcard to their County Extension office. The deadline for submitting a final application form is *(postmarked)* November 15, 1975. The addresses of eight County Extension offices with Master Gardener Programs are listed below:

Benton County Cooperative Extension Service, Courthouse Annex, Prosser 99350

Island County Cooperative Extension Service, Courthouse, Coupeville 98239

King County Cooperative Extension Service, Courthouse, Unit 2, 100 Crockett, Seattle 98109

Kitsap County Cooperative Extension Service, Courthouse Annex, P.O. Box 146, Port Orchard 98366

Pierce County Cooperative Extension Service, 5601 Sixth Ave., Tacoma 98406

Snohomish County Cooperative Extension Service, Ag. Bldg., Everett 98201

Spokane County Cooperative Extension Service, County Courthouse, Spokane 99201

Whatcom County Cooperative Extension Service, Courthouse, Bellingham 98225

Windows on the World*

JOHN L. CREECH

Years ago, David Fairchild wrote of his travels as a plant explorer in *The World Was My Garden* (Scribners, 1938). Through this book, plant lovers have journeyed with this remarkable man to the garden spots of the world — Japan, like a series of island parks laced with cherry blossoms, verdant forests of bamboo, and quiet gardens arrayed with colorful azaleas; to the spice islands of the Pacific with myriads of rare tropical fruits; across North Africa to the Middle East for date palms, sorghums, and the delights of Oriental bazaars, until the reader has explored mentally the gardens of the world.

Like the plant explorers before and after him, Fairchild sent home the seeds and plants of fruits, vegetables, and ornamentals. His, for example, were among the first introductions of flowering cherries, giant bamboos, and zoysia lawngrass from Japan. Other explorers are credited with providing basic genetic resources of food crops, fibers and industrial crops, forages, medicinal plants, and ornamentals. We take so much of our agricultural abundance for granted; the average person is not aware that of the major and lesser crops of world commerce, the continental United States can claim only the sunflower. Although there are natives like the blueberry, cranberry, and pecan, these are not classed as particularly important crops elsewhere in the world.

We see the introduced crops of the world in the magnificence of their full productive capacity as we journey across the United States. In aboreta and botanic gardens of the major cities, we can enjoy ornamental plants introduced from other continents, either typical of the wild species or as varieties improved through breeding and selection by generations of horticulturists. Plants brought from around the world can be found in garden settings and conservatories, sometimes arranged by taxonomic relationships, or perhaps on a geographical basis, so one may see the variation in plants from different parts of the world. Frequently, they are arranged in gardens so as to display flowers, fruits, autumn color, habit of growth, or in demonstration plots of hedges, groundcovers, and other aspects of plant use. Primarily, arboreta and botanical gardens are places of research and education which allow the visitor to appreciate the array of plants that cover our planet.

The National Arboretum of the U.S. Department of Agriculture is truly one of our windows on the world. Located on a 412-acre tract in the northeast quadrant of Washington, D.C., the Arboretum is the result of an Act of Congress in 1927 "for purposes of research and education concerning tree and plant life." It contains one of the finest collections of trees and shrubs in the United States, largely the results of plant exploration efforts. From April through June, some 70,000 azaleas bloom to attract and dazzle thousands of tourists. Rarely do the viewers realize, as they walk among the azaleas, that they are making a pilgrimage similar to great numbers of Japanese who journey to the volcanic cones of Kyushu Island to view azaleas in their native surroundings.

As he stands in our 25-year-old grove of *Metasequoia*, the dawn redwood, the visitor learns for the first time that far up the Yangtse River in Mainland China, a similar but far more majestic grove of this rare conifer occurs. The dawn redwood has been there for centuries, but we knew it only as a fossil until the discovery of the living trees in 1945.

The plantings of camellias cannot be ignored. Here in the shade of *Cryptomeria*, a favorite evergreen tree of Japan, now interplanted among native American trees, myriads of camellias grow and flower as luxuriantly as in any Japanese garden. The camellias blossom from autumn when they are tinted with falling yellow and red leaves, through the winter and into late spring, according to the mildness of our seasons. Across a ravine of native trees, a grove of giant cedars from the Atlas Mountains of North Africa shade a winding path to the Chinese gazebo

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*Bicentennial visitors to Washington, D. C. will want to visit this window on the world! This article is reprinted from *The Garden Club's of America Bulletin* with their permission.

overlooking the Anacostia River, Here, one can see the best elements of shade gardening using ground covering plants in lieu of grass.

Near the road above this garden stands a small tree with large date-colored fruits, generally ignored by most visitors. This tree is the Chinese jujube *(Ziziphus jujuba)*, cultivated since Biblical times in the Mediterranean region for its pleasant palatable fruit. I have seen orchards of jujube grown in Central Asia where it is considered a delicacy. The visitor will note that this entire garden was created through the auspices of The Garden Club of America.

Similar pleasures await the visitor in Fern Valley, a woodland ravine of native ferns, groundcovers, and shrubs of eastern United States, sponsored by the American Fern Society and the National Capital Area Federation of Garden Clubs, Inc. About the only extensive invaders are the carpets of daffodils in hundreds of varieties and some 50 varieties of common ivy *(Hedera helix)*, both natives of southern Europe. The dogwood gardens, presented by the Woman's National Farm and Garden Association, Inc., offer the visitor an opportunity to compare our native dogwood *(Cornus florida)* to its relatives from Japan, Korea, China, and the Soviet Union. In early March, the Cornelian cherry from the Crimea *(Cornus mas)* with its bright golden flowers begins the parade of dogwoods. It is well into June before the last of the dogwoods, *Cornus kousa* from Japan and China, makes its appearance. At the National Arboretum, the dogwood planting is designed, particularly, for long vistas, views from overlooks, and pleasant strolling. The Margaret Douglas Overlook, provided by the Woman's National Farm and Garden Association, offers a fine view of the native plants along the Anacostia River.

While these displays of nature's handiwork, with some improvising by man, are of paramount interest, the visitor will find the Gotelli collection of dwarf and slow-growing conifers a unique experience. This is probably the most extensive collection of its kind in the world. At first, one can scarcely comprehend the scope of plant variations assembled in this collection. A subsequent, more leisurely visit affords the opportunity to appreciate the way man has been able to select and perpetuate subtle variations in plants. The Gotelli collection, established in 1962, contains about 1,500 specimens representing 30 genera, and occupies a 5-acre hillside. The plants are established in attractive groupings that range from prostrate forms to compact, upright types, with variegated varieties of conifers and occasional deciduous trees to give additional contrast. Simulated rock outcroppings, blue stone chips, perennials, and bulbs add to the design. Eventually, a water course will complete the setting. This is one of the most popular attractions at the National Arboretum and continues to receive increased attention as the specimens acquire age and beauty.

The Braille Trail offers the sightless a chance to explore, through sensitive hands, the texture of pine needles, softness of hemlock branches, and moss on a damp fallen tree trunk.

The National Arboretum is, indeed, a window on the world where we may see the variation in plants at all times of the year: at the height of spring bloom, during the greenness of summer, as leaves and fruits change to autumnal color, and in the starkness of winter, either the dark greens or purples of conifers, or leafless silhouettes of deciduous trees permitting one to appreciate structure and bark. ♠

DON'T KILL THAT SNAKE!

Snakes are one of the gardeners best allies. It is natural to fear what we do not understand and snakes are no exception. While often killed upon sight, snakes are in fact very beneficial creatures. They feed almost entirely upon grubs, slugs, insects and in the case of larger species, rodents and other small mammals. Almost the entire menu of a snake's diet consists of garden pests.

If fear of snakes is among your list of phobias, try to acquaint yourself with the common snakes of our area and learn more about them and the good they do. Snakes need not be feared and wise gardeners will welcome them into their gardens.

— The Western Washington Gardener, Cooperative Extension Service, Washington State University

ARBORETUM ANNUAL REPORT

JOSEPH A. WITT

June 1974 - May 1975

In general, the situation with the Arboretum is less dark than last year at this time although there are still many areas where improvements must be made in order that its full potentials can be realized.

Perhaps the major event of the year was the reaffirmation of the 1934 agreement between the University and the City of Seattle last summer and the recognition by the city of its responsibility in helping to maintain the Arboretum. Beginning in January this year there have been five staff members of the Seattle Park and Recreation Department who have taken over the maintenance and care of the grass, service roads and trails, parking lots and similar areas. They have also furnished equipment and supplies of various types such as spray materials and fertilizer for use on the collections. The city has pledged $100,000 for the year and the University will match this amount.

Although we anticipated some problems with the melding of the two crews, nothing more serious than minor adjustments as to working hours or holidays has arisen. This arrangement allows concentration of the University staff on maintaining the collections. There now seems no reason why this division of responsibility will not work well so long as the present rapport continues.

Two Seattle Park and Recreation Department employees, Curtis Sapp and Eric Nelson, University of Washington students, confer with Dick Hart, Foreman of the University's Arboretum crew. Maintenance efforts of the Park Department crew, as well as the city's contributions of equipment and materials have permitted the University staff to concentrate on maintaining the collections. NOTE: All photos in this report are the work of Joseph W. Marshall.

Operations

Once again, this year the major concern of Arboretum operations has been to hold past gains. The limited staff had nearly all they could do to take care of routine maintenance until the first of the new year when help came from the Park Department. At that time we were able to develop a few areas for new plantings and plans are being considered for others. The most ambitious project was in the holly collection where the beds were extended south and west and an entirely new planting of various *Ilex* species and hybrids was made. A new Camellia bed and witch-hazel bed were developed and planted and a lovely little pond at the foot of Rhododendron Glen was rescued from years of weeds and neglect. It is planned for a dwarf rhododendron and conifer display there when the horsetail and quack-grass are eliminated. None of these developments have been as simple as first anticipated. We have had to change and replace rusting waterlines and broken drains nearly everywhere.

For the first time in many years the rhododendrons received a good pruning, just in time for the annual meeting of the American Rhododendron Society.

The Japanese cherries, especially the early flowering spring cherries, have been severely attacked by bacterial canker for at least 10 years. This spring, for the first time in the past four or five, we have seen some progress made on the control of this disease. While some of the older cherries are beyond help and will have to be removed shortly, the majority appear as if they might last for many more years. We feel we achieved this control with a copper spray applied in early October.

The one big operational problem of the year came on December 26, 1974 in the form of a heavy snow which broke branches and flattened shrubs. Nearly a month was required to pick up and chip the branches, and as much time was spent in straightening and pruning injured trees and shrubs. Fortunately, there were few losses of unique or especially fine specimens. Birches, camellias, vine maple and some rhododendrons seemed to have borne the brunt of the storm, although many branches were torn from the large old native conifers as well.

Esiquio (Chico) Narro, one of eight permanent and six part-time members of the University Arboretum staff, sprays Japanese cherries along Azalea Way.

Grendal Ratcliffe, kneeling, CETA training program employee, works with Al Eddy, University gardener, to learn proper watering techniques.

Anne Switten, who replaced Mrs. Betty Wittenberg as Secretary in the Arboretum office, answers one of the 2,531 telephone queries for plant information which have come into the Arboretum.

Education

Mr. van Klaveren, Mr. Narro, and Mr. Witt all participated in Continuing Education Programs offered through the College of Forest Resources. Mr. van Klaveren's houseplant course, in part given in cooperation with Dr. Hatheway, was so much in demand that it was repeated twice. He also was able to attend the International Plant Propagators' conference in San Diego with funds granted by the Unit Council. Mr. Witt attended the national meeting of the American Association of Botanic Gardens and Arboreta in Boston and its western chapter meeting in Vancouver B.C. Mr. Narro was a delegate to the International Shade Tree Conference northwestern meeting in Portland. These trips were funded all or in part by the Arboretum Foundation or Unit Council.

Staff

The major change in Arboretum staffing came with the retirement of Mrs. Betty Wittenberg, our secretary of some eight years. She has been replaced by Ms. Anne Switten. We have been able to make good use of the Work Study program of the University and have had as many as five stu-

Linda Parlin, University Work Study student conducts a tour of the Arboretum for approximately thirty students from combined Landscape Construction and Nursery Greenhouse classes from the Clover Park Vocational and Technical Center in Tacoma, Washington. Members of the Arboretum staff participated in forty-three such tours, lectures or demonstrations during the year.

dents working part-time — some as gardeners, others in charge of our record keeping. In addition, we have three students from the Seattle school district's Work-Training program that spend half a day working with Mr. Narro learning various gardening skills.

Brian Mulligan, Director Emeritus, has very nearly finished his catalogue of plants growing in the Arboretum and hopes that it will be published some time this fall or by early winter at the latest.

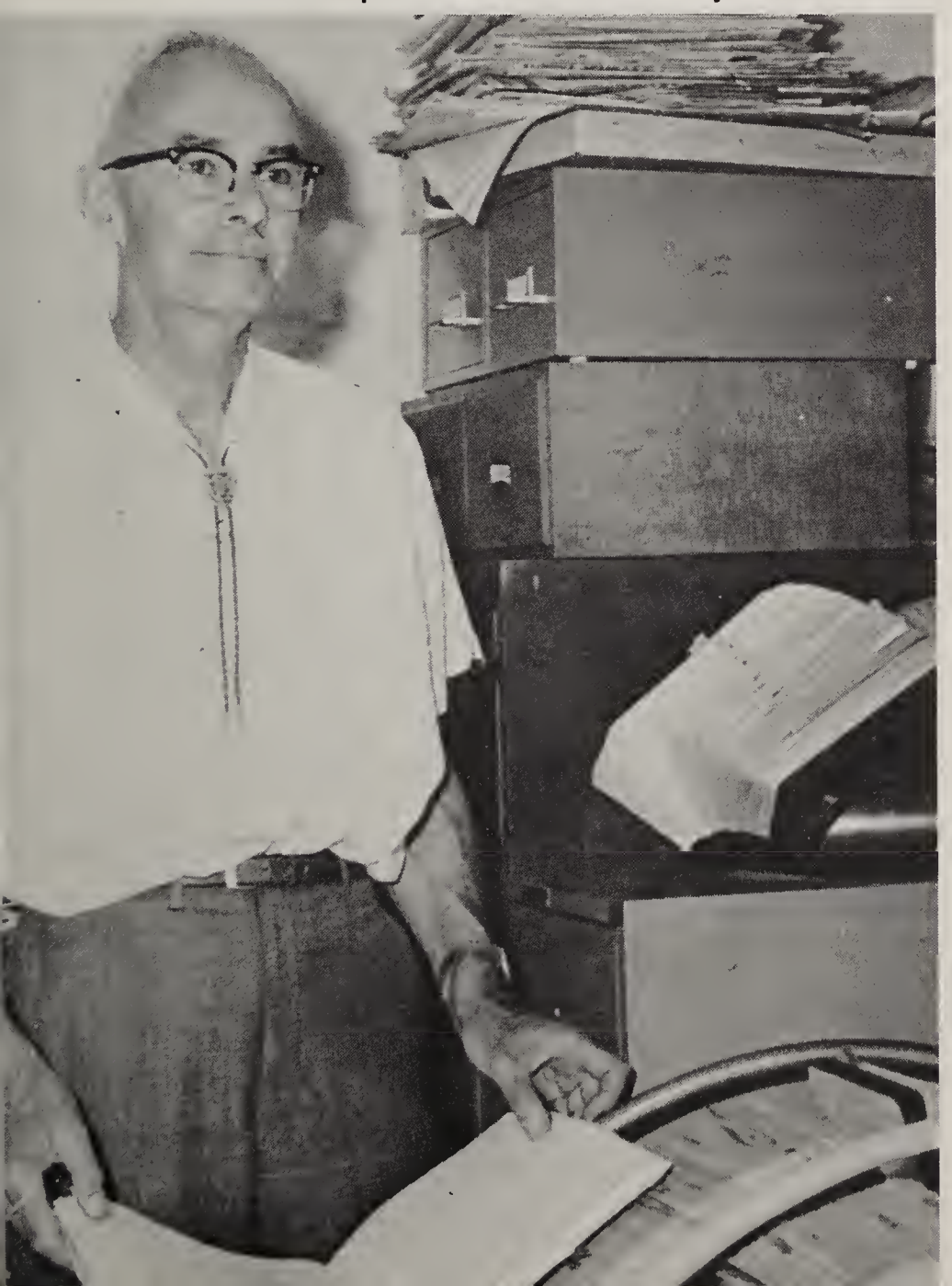
Miscellaneous

Several plants new to horticulture were named and registered in the past year. Perhaps the most promising is *Mahonia* 'Arthur Menzies,' a hybrid mahonia which we have had under study since about 1962. Others are *Ceanothus* 'Blue Cascades,' a low growing and apparently hardy ceanothus; *Abies concolor* 'Husky Pup,' a dwarf form of white fir; *Tsuga heterophylla* 'Iron Springs,' a dwarf form of the western hemlock found by Mrs. Ainsworth Blogg near Iron Springs resort on the Pacific coast and given to the Arboretum in 1969.

Volunteer Jan Pirzio-Biroli catalogues some of the 156 slides that have been added to the slide collection this year.

The University receives seeds through the international seed exchange and distributes them to other institutions. Here Dirk van Klaveren plants some of these seeds received. During the year, 621 kinds of plants, cuttings and seeds were received from 102 sources. Under the guidance of the Arboretum staff, Unit 66 distributed 2,833 packets of seeds to 192 institutions, a voluntary contribution of many man-hours.

Brian Mulligan reviews the now completed 449-page manuscript of the alphabetical listing of woody plants growing in the Arboretum in Washington Park. The Catalogue includes some 4,300 taxa of all kinds. It is hoped that it will be available in published form later this year.



The 1975 flowering season was outstanding in some ways and disappointing in others. Of course the weather has a great bearing on flowerings and this spring was long and cool. The asiatic magnolias were magnificent, the cherries good, the camellias good, the rhododendrons fair, and the azaleas very good. The mild winter, we hope, allowed some of the more tender species to get a year's growth and they should be in good shape for next winter.

As part of the expanding Arboretum program, 250 plants from our nursery were moved to the Bloedel property this spring for trial there. All were surplus to the needs in Washington Park and would soon be too large to move. It will be interesting to compare their growth on Bainbridge island with that of the same stock in Seattle.

Union Bay Arboretum

Perhaps the most exciting Arboretum development during the past year has been the proposed new facility on the Montlake fill of the University campus. This proposal has been extensively covered in the last two issues of the *Bulletin* in articles by J. A. Witt (Winter, 1975) and Jones and Jones (Spring, 1975). Briefly, it is hoped that this area of approximately one hundred and fifteen acres will be converted into a research and teaching facility which will complement the Arboretum in Washington Park. Preliminary plans have been accepted by the University administration and the firm of Jones and Jones Landscape Architects and Environmental Planners is now preparing a master plan for its development. The master plan should be ready by mid-summer.

Dirk van Klaveren prepares a rooted leaf cutting of *Mahonia* 'Arthur Menzies' for distribution to another botanic garden. This year the Arboretum sent out 105 taxa (kinds of plant material) to 33 institutions.

The Arboretum attracts many visitors throughout the year. Julia Witten of Denver, Colorado watches as her Seattleite daughter Barbara Erickson photographs a scene of quiet beauty in the Arboretum. This year the traffic count on Arboretum Drive E. was 109,749; visitors to the Japanese Garden numbered 60,487.

1974	High	Low	Precipitation in Inches
June	84	43	1.18
July	93	45	2.13
August	90	49	0.11
September	90	40	0.18
October	71	35	1.80
November	58	33	5.47
December	56	28	7.05
1975			
January	55	25	4.89
February	58	26	5.24
March	62	25	4.36
April	70	29	2.53
May	81	35	1.53 (to 5/25/75)

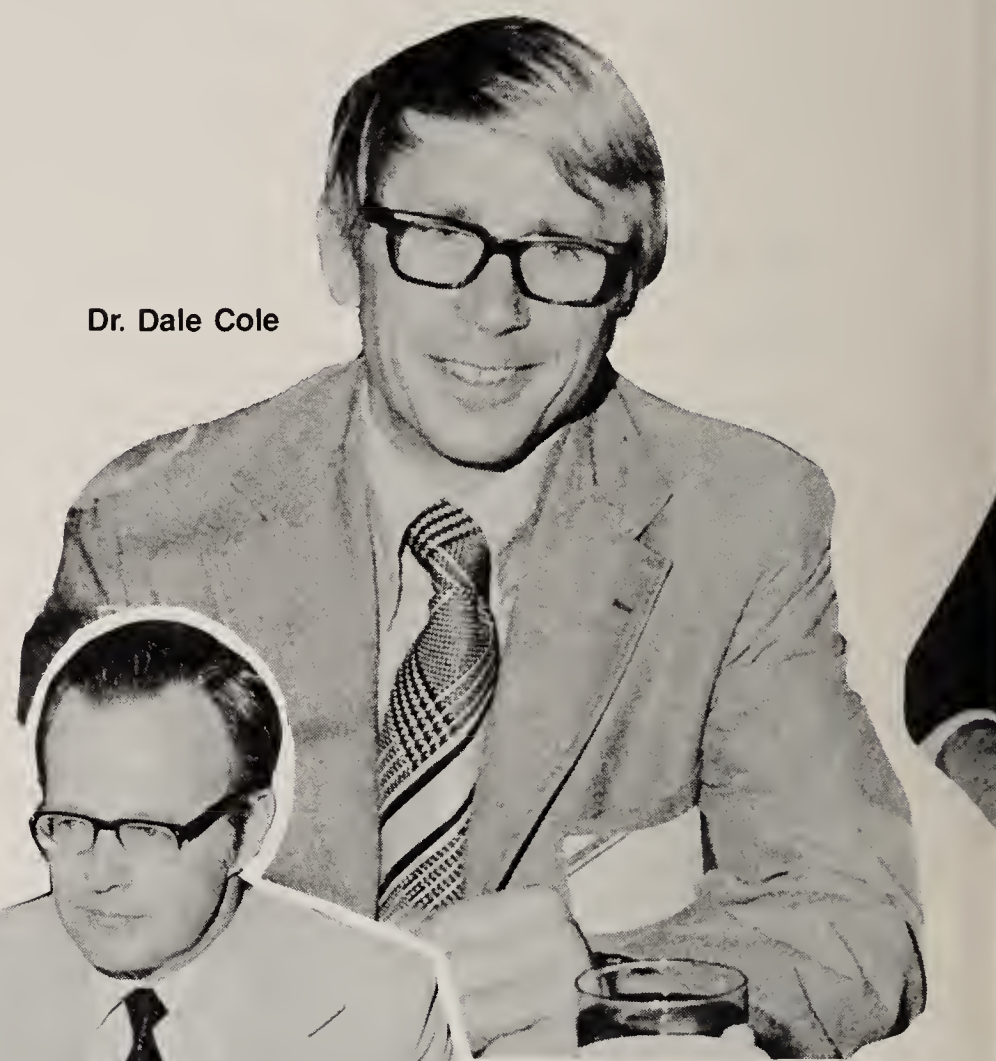
total: 36.47 (20-year average: 40.66)

A blind student learns about nature in the Arboretum.

ANNUAL MEETIN

Arboretum Foundation members number 2848. The Ann
and their guests to enjoy fellowship and dinner together an
activities of the immediate past year and projections for t

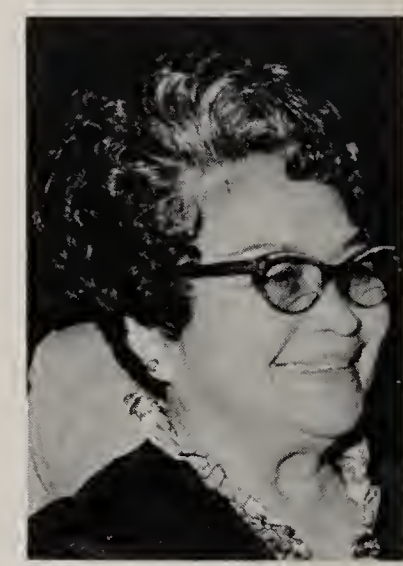
Mr. David Towne



Dr. Dale Cole

Councilman Sam Smith

Mr. N. Stewart Rogers



Mrs. Pablo Abellera

Dr. and Mrs. William Hatheway

Mrs. Virginia Van Ness

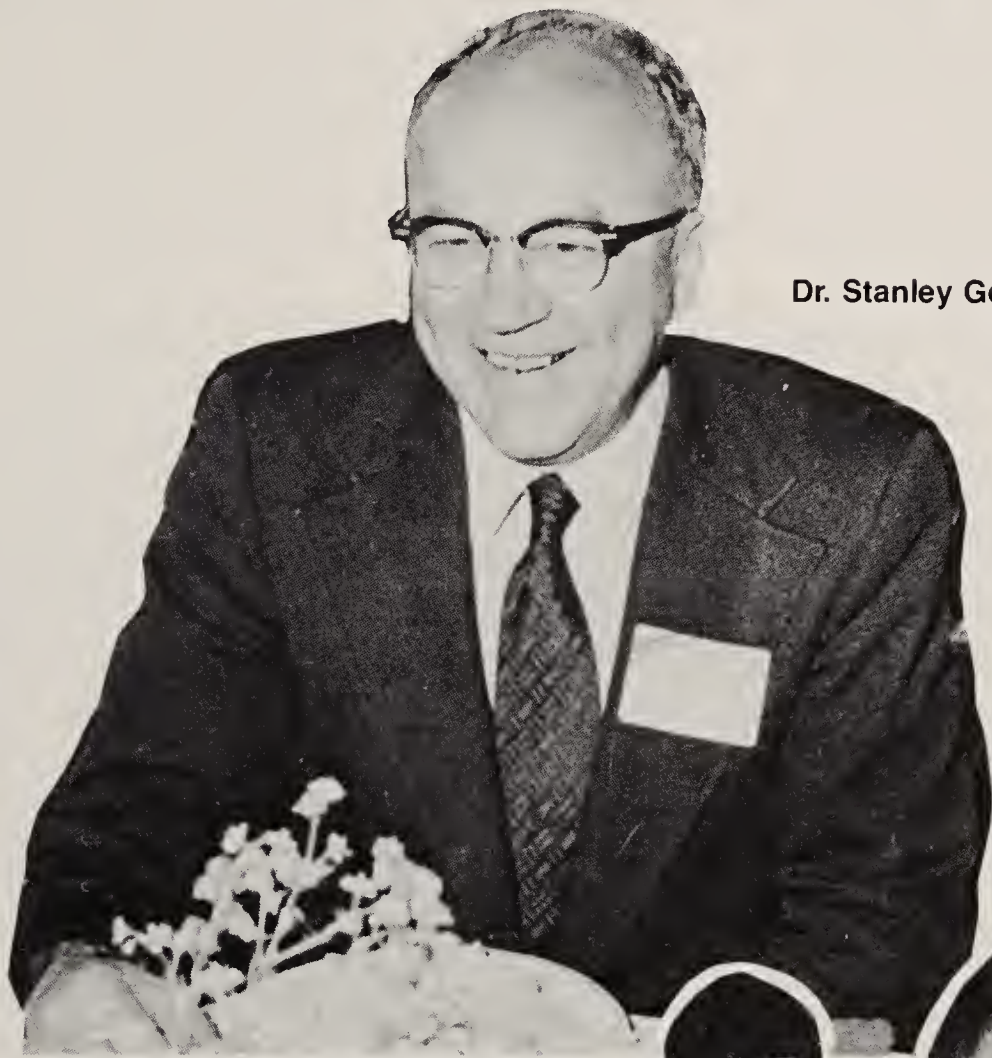
G VIGNETTES

Meeting provides an opportunity for members hear highlights of Arboretum and Foundation uture. Photos: Joy Spurr

Mr. and Mrs. Joseph Witt

Dr. and Mrs. Philip Cartwright

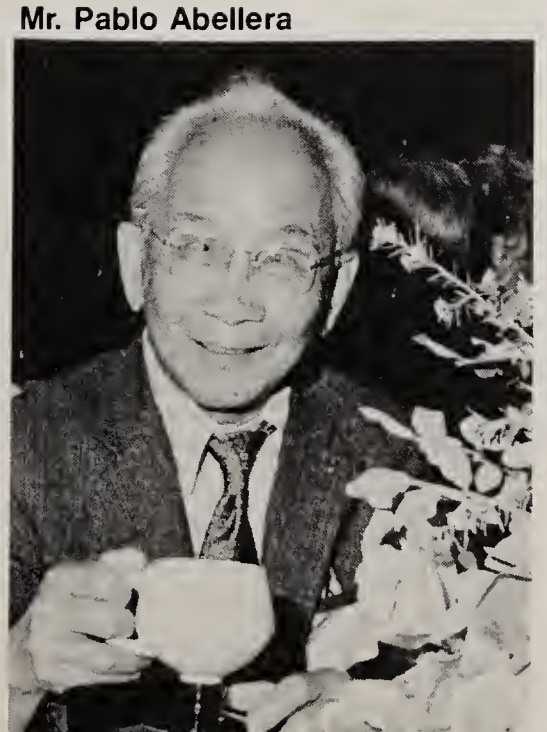
Mrs. Donald Graham



Dr. Stanley Gessel

Mrs. Kerry Trimble

Mr. Pablo Abellera



Mrs. Gordon Logan

Mrs. Conner Gray

U. of W. Arboretum Classes - Fall Quarter, 1975

FALL TOURS. Mr. Joseph Witt, plant curator, will conduct tours of the Arboretum in fall color, including the Oak Section and Woodland Gardens. Class limited to 25. Saturdays, Sept. 27, Oct. 11, Nov. 1; 10-12 noon. Meet at Arboretum office. 3 sessions, $5.

IDENTIFICATION OF NATIVE TREES AND SHRUBS. Mr. Hollis Barber, forest ecologist, will conduct this field class on identification. Over 40 species of common trees, shrubs, and ferns native to western Washington will be covered. Each section limited to 15; meet at Arboretum office. Saturdays, Sept. 27, Oct. 4, 11, 18. 4 sessions, $10. Section A; 10-12 noon; Section B: 12-2 p.m.

PRUNING ORNAMENTALS. Mr. Chico Narro, expert nurseryman, will demonstrate techniques of pruning trees and shrubs. Arboretum greenhouse; class limited to 30. Saturdays, Nov. 8 & 22; 10-12 noon. 2 sessions, $5.

HOUSE PLANTS. Mr. Richard van Klaveren, Arboretum propagator, will discuss indoor plants. Topics covered include houseplant identification, techniques of propagation, and care. Materials furnished. Arboretum greenhouse; class limited to 15. Saturdays, Oct. 4, 11, 18; 9:30-12:00 noon. 3 sessions, $10.

BONSAI CULTURE FOR BEGINNERS. Mrs. Horace Raphael, authority on bonsai culture, will teach a series of 10 workshops for beginners. Students receive two trees suitable for bonsai, and may add their own selections during the course. Class limited to 12. Wednesdays, Oct. 8, 15, 22, 29, Feb. 18, 25, March 3, 10, 17, 24; 7:30-9:30 p.m. 10 sessions, $55.

INTERMEDIATE BONSAI CULTURE. Mrs. Raphael will conduct this series of 10 workshops for students with some experience in bonsai culture. Class limited to 12. Tuesdays, Oct. 7, 14, 21, 28, Feb. 17, 24, March 2, 9, 16, 23; 7:30-9:30 p.m. 10 sessions, $50.

ADVANCED BONSAI CULTURE. Mrs. Raphael will also teach a series of 10 workshops for students with more extensive experience in bonsai culture. Class limited to 12. Thursdays, Oct. 9, 16, 23, 30, Feb. 19, 26, March 4, 11, 18, 25; 7:30-9:30 p.m. 10 sessions, $50.

To register, send check made payable to the University of Washington to: Arboretum Courses Anderson Hall, AR-10, University of Washington, Seattle, WA 98195

For further information, call 543-2730. *(continued on p. 17)*

This is your Arboretum, kept alive by your support

We are pleased to welcome the following new members (April 1, 1975 through June 30, 1975):

Contributing — Mr. & Mrs. Maxwell Carlson, D. L. Emenhiser, M.D., Russ Rasmussen, Gordon Sick. *Sustaining* — John Barder, Mr. & Mrs. Jose Falceto, Mrs. John H. Fisher, John W. Fowble, Miss F. M. Krauland, Mrs. Norman S. Losk, Mr. & Mrs. Jack MacDonald, Mrs. John A. Maxwell, Mrs. George N. Miori, Dr. & Mrs. James E. McMurray, Mrs. Robert Person, Mrs. James W. Peterson, Mrs. Albert M. Pollmar, Mrs. Lawrence Schwartz, Dr. & Mrs. E. L. Severinghaus, Martha M. Smyser, Mrs. Daniel Streissguth, Mrs. Margaret Suenga, Mr. & Mrs. Lenard Zapara. *Annual* — Mrs. Shirley M. Ager, Mrs. Frank L. Anderson, David Brastow, Mrs. Leo J. Buchberger, Mrs. H. Richard Bushley, Mrs. Robert Calhoun, June Delaloye, Mrs. William J. Ditty, Mrs. B. C. Evons, Mrs. Douglas W. Ferguson, Eugene R. German, Mrs. Bruce C. Gilliand, Robert F. Glock, Richard A. Haase, Mrs. David L. Hensel, Mrs. Fred F. Herzberg, Sonja Hilton, Mrs. George W. Hutton, Jr., Mrs. Benjamin A. Jayne, Mrs. Neal C. Johnson, Mrs. Willis W. Kludt, Mrs. Michael Krieger, Mrs. Robert F. Kruse, David Lawrence, Robert W. Love, Miss Prissy Martin, Mrs. Doris M. McCallum, Mrs. Mark W. McClure, Mrs. Robert J. McCoy, Merlin Montgomery, Ladd Morse, Mrs. Lee Savage, Miss Saskia Schott, Mrs. David R. Seymour, Vernon S. Simmons, Mrs. R. J. Svendson, Mrs. Roger D. Swaim, Mrs. Ronald E. Taylor, Mrs. Edward M. Thomas, Mrs. Richard P. Tilbury, Mrs. James C. Trombold, Mrs. Theresa K. Ueland, Mrs. John L. Underwood, Mrs. Ross V. Waggoner, Mrs. Andrew J. Yuhl.

We are also grateful to the following who have increased their dues to: *Supporting* — Harold G. King. *Sustaining* — Mrs. Bruce McKibbin, Mrs. J. M. McMenamin.

ADVANCE NOTICE: Dr. R. F. Stettler, Professor of Forest Genetics, will teach a non-credit evening class in winter quarter. Tenatively titled "An Introduction to Trees," the 10-session course is intended to give lay people a better understanding of trees — their biology, importance in the environment, and significance in our lives.

Further information on this class will be in the winter issue of *Spectrum*, the University's quarterly bulletin of continuing education activities. To be added to the *Spectrum* mailing list, call 543-2590.

Edmonds Community College - Fall Quarter, 1975

AUTUMN PLANT IDENTIFICATION (HORT 106; 6 credits). Broadleaf evergreens of ornamental use are identified as well as their growth habits and requirements. (Wed. 6:30-10:20 p.m., Sat. 8 a.m.-12 noon)

HOUSE PLANTS (HORT 134; 3 credits). The identification, culture and care of the common house plants. This will be a prerequisite of the upcoming Winter Quarter course in Interior Landscaping. (Thurs. 6:30-10:20 p.m.)

BEGINNING FLORAL DESIGN (HORT 241; 3 credits). Flower and foliage arrangement principles for non-arrangers. Simple arrangements, understanding plant materials, selection of materials, and construction of designs, emphasizing arrangements with maximum effect from minimum material. (Wed. 6:30-10:20 p.m.)

There are also a number of day-time offerings. Cost is $8.30 per credit hour. For further information, contact the Horticulture Department at Edmonds Community College.

The Arboretum lagoon is a favorite spot for fishing and canoeing! Photo: Joseph W. Marshall

ARBORETUM FOUNDATION ANNUAL REPORTS*

**The following reports presented at the Annual Meeting have been edited for presentation in the* Bulletin; *the full reports are on file in the Foundation office. The Treasurer's report in the form of the unaudited financial statement as prepared by Price Waterhouse & Co. is to be found on the Inside Back Cover. A complete audited report will be available in the Foundation office at a later date. Unless otherwise identified, photographs are by Jean Henderson.*

PRESIDENT'S REPORT

President Rogers reported in detail the recommendations of the Board of Directors in establishing priorities for the use of Foundation funds for the development of the Arboretum as requested by the University. Presented to members in attendance and adopted by them were the following items in the order of their established priority: a Visitors' Center in Washington Park containing an administrative center for the Arboretum, public information areas, classrooms, a small kitchen, and offices for the Foundation and other horticultural organizations; display and demonstration gardens; irrigation systems; development of adequate drainage of twelve acres west of Azalea Way; Japanese garden protection and planting renewal; and an initial donation of $25,000.00 to the East Bay development.

Azalea Way is a favorite strolling place almost *any* time of the year! Photo: Joseph W. Marshall

MEMORIAL COMMITTEE

The Memorial committee reported work on the new bronze gates in the Arboretum is proceeding. Professor George Tsutakawa, designer and builder of these gates anticipates an early fall completion. Work on the foundation structure at the north end of the Aboretum has already begun. We look forward to an early dedication when Mr. Tsutakawa's work is completed.

NOMINATING COMMITTEE

Officers for 1975-76: President, N. Stewart Rogers; 1st Vice-President, Prentice Bloedel; 2nd Vice-President, Lee Clarke; 3rd Vice-President, Mrs. Mortiz Milburn; 4th Vice-President, Captain W. R. Wilson; Secretary, Mrs. Allen D. Moses; Treasurer, Miss Phyllis Cavender; Past President, John A. Putnam; Executive Secretary, Mrs. Marilynn Holm.

Board of Directors: Three Year Term — Mrs. Maxwell J. Short, Mrs. Arthur P. Gardiner, Mrs. Gordon Logan, Mrs. William Speidel, Mrs. Roger Spurr, Mrs. George Weyerhaeuser, Mrs. Ruby Williams. Two-Year Term — Dr. Neil D. Adams, Robert Behnke, Mrs. H. P. Clausing, Mrs. J. Decker, Calhoun Dickinson, James Fukuda, Donald Graham, Jr., Joshua Green III, Dr. Pirzio-Biroli, Mrs. Robert D. Read, Mrs. John S. Robinson, Kenneth Sorrells. One Year Term — Mrs. Joseph P. Butler, C. Spencer Clark, Donald C. Davis, Mrs. Allan B. Engle, John Hauberg, Edward Hume, Glen Hunt, Mrs. Moritz Milburn, Robert Mooney, William S. Reed, Mrs. Henry Schmitz, Dr. C. Edward Simons, Jr., Honorary Directors — Lawrence V. Olney, Mrs. Frantz Nehammer, Mrs. Percy Guy.

JOHN S. ROBINSON,
Chairman, Nominating Committee

JAPANESE GARDEN

At the time of last year's report we were very hopeful that we would have a Tea House in 1975. However, control, administration, and protection must be assured prior to restoration.

During the past fiscal year meetings have been held to formulate plans to launch a campaign to rebuild the Tea House. Inspection trips have been made and the consensus of the committee is that a replacement building, built in Japan would be prohibitive in cost. The probable alternative will be to construct the Tea House from native Washington materials.

One of the Arboretum Foundation's newest units, Unit 21, has donated $1,000 toward restoration of the Tea House. The money came from a special fund raising held by the unit. Our grateful thanks to all Unit 21 members.

Recent action by the Arboretum Foundation has enabled those connected with the Japanese Garden to proceed with major maintenance in connection with practically all phases of pruning, pond work, training and shaping the Japanese pines, plus transplanting and adding necessary trees and shrubs.

With the approval of this work by the University, the above will be performed by gardeners qualified to accomplish these needed items.

Prentice Bloedel Unit No. 86 received second place award for their Work and Fun Day effort in the Japanese garden.

JOHN S. ROBINSON

UNIT COUNCIL

One of the real bonuses of being General Chairman of the Unit Council is the privilege of reporting the work of efficient committees who have made this past year one of growth and productivity.

Marlee McKibbin, 1st Vice Chairman in charge of membership, heads a committee of ten District Representatives who represent seventy-nine units and 1,525 men and women. This year 166 new members were placed in units before the Plant Sale. Twenty-four more joined the Foundation at the Plant Sale, some of whom wish to be placed in units.

Lee Clarke, 2nd Vice Chairman in charge of Education set up six cutting parties of twelve people each at the Unit Council Greenhouse where choice plant material was shared with seventy-two people who hopefully have added knowledge, fun and experience and some choice new plants for their gardens. Lee also arranged four programs for the Unit Council meetings on widely divergent subjects: "Salal and its Relatives," "The Climate, Soil, Animals and Plants of the Kitsap Peninsula," "Heritage Roses," and "Human Trampling in the Wilderness." In January she organized a series of lectures for 122 listeners on "Vegetable Gardening from A-Z" given by Louis Opfer, a Master Gardener from the King County Extension Service and a later series for 52 people on "Learning to Understand Hitchcock's book *Flora of the Pacific*

Admiring blooms on magnolias in the Arboretum are new officers of the Unit Council Governing Board: (l. to r.) Irene Christofferson, Lee Clarke, and Sally Sue Coleman. More than half of the Arboretum Foundation's 2850 members are also members of units. These groups support the Arboretum through public service activities and money-raising projects.

Northwest given by Mrs. Joseph Witt. Both series realized a profit of $400.00 and were responsible for 32 new Foundation members. Study groups — rhododendrons, house plants, Northwest natives, and rock gardens — are also Lee's responsibility as is the series known as the Arboretum Explorers, guided by Bob Vandenburg. The tours through the Arboretum this year varied from five participants on a cold rainy Wednesday to eighty on a warm sunny day in August.

Ruth Vorobik, our Finance Chairman, reports the Unit Council has donated $13,725.00 to the University this year and individual units donated approximately $2,500.00 more. A new mimeograph machine and scanner were purchased for the Foundation office at a cost of $1,821.00. Total funds on hand April 30, 1975 were $78,667.00, an increase of $12,128.00 over the previous year.

Third Vice Chairman Louise Czerniski meets every Tuesday and third Friday with her Patricia Calvert Greenhouse crew of fifty-eight women and six men. In the past year over 460 entries were made in the cutting books, recording over 5,100 cuttings. Additionally they made 167 divisions of plants, potted 151 seedlings and received 47 collected plants from Margaret Miller. Greenhouse propagated plants sold at the Plant Sale for a profit of $1,137.00. The crew gave greenhouse tours to two units and a cutting demonstration to another. Unit-donated funds of $585.00 were used to purchase a new heater, fluorescent lights and timers, plastic and wood for cold frames and lath house, and for soil and pots. Unit 64 donated a copy of *Exotica*.

Jeannine Bannick, Hospitality Chairman, arranged our four monthly meetings at the Sand Point Community Church, hired the cateress, found units to be hostesses and saw that supplies were always on hand. She also arranged homes for the monthly board meetings.

Another educational and public service program is our three-part guide program: Japanese garden, schools and native walk. Joan Arnold, Japanese Garden Guide Chairman reports thirteen guides conducted 275 adults and 200 chil-

Pat Boehm, South Tacoma, and Louise Czerniski of the Patricia Calvert Greenhouse crew prepare cuttings for rooting on the mist bench. Greenhouse-grown plant material added $1,137.00 to the plant sale profits.

Jolly Wolter repots a rooted cutting. Careful records are maintained of the choice materials propagated.

Elizabeth Moses, center, checks a botanical reference while on an orientation walk with other Native Walk and School Guides. Emphasis of all the guided tours is on the usefulness of plants to man.

dren in twenty-nine tours this year. Diane Morgan, Native Walk Chairman announced 32 tours including three high school groups, one college botany class, Arboretum units and garden clubs (including sixty members of the North University Garden Club from British Columbia), and a large group of children from the Pacific Science Center. Cora Gardener heads eleven school guides who made twenty-eight visitations and talked to 1,176 students in Seattle, Edmonds, Lake Washington, Bellevue and Renton. Four school guides made seven visits to the Recreational Therapy department of Children's Orthopedic Hospital planting bulbs, plants, or making decorations or bouquets of fresh flowers and greenery. They also made on visit to Senior citizens at the "People's Portable" at Whittier Elementary School.

Jeanne Gardiner, our Horticultural Chairman, provided plant specimens and horticultural information at each Unit Council and Board meeting. She also obtained Arboretum plants for door prizes for each Unit Council meeting, for the Unit Program year book and the Thorgrimson Cup awards, this year won by Unit 84 and Unit 16, respectively. Jeanne was also our Bulb Sale Chairman assisted by Jane Rogers. (The last board meeting voted to give independent status to the fall Bulb Sale.) Jeanne purchased 53,000 bulbs, filled 400 pre-orders and made a profit of $3,261.00.

Shirley Veblen, Publicity Chairman, gathered material from units and various committees for Jean Henderson, the Foundation Publicity Director.

Helen Horrigan, chairing the Research Committee was responsible for the plant sale list and for maintaining and adding to folders containing pictures and horitucltural information on file in the office for use of the members. Helen also helped to find illustrations of plant specimens to be on sale at the Plant Sale.

Jeannine Curry, Plant Sale Chairman, headed a group of 545 cheerful workers who sold almost $28,000.00 worth of plant material in ten hours and made a profit of $15,096.00.

Ruby Williams and her ten-member Herbarium Committee collected 193 varieties of plants, concentrating on flowering and fruiting specimens of the Sorbus collection, plus some

Doris Benckert, Ruby Williams and Jean Niemeier, members of the Herbarium committee have a goal of enormous proportions: to collect in a systematic manner stems, leaves, fruits and flowers from all the plants in the Arboretum. Carefully selected material is dried, mounted, labeled with pertinent information regarding source and location in the Arboretum, and covered with a protective sleeve of clear acetate before storing.

hydrangeas and clematis. The committee shipped 229 specimens to the National Arboretum in Washington, D.C. in response to a request from that institution.

Program Planning Chairman Nancy Hewitt has met with new unit chairmen and has given assistance to them and their program chairmen for program planning for next year's activities.

Doris Taggart, Unit Quarterly news editor, has kept unit members informed of all unit activities, Plant Sale, Work and Fun Day, meetings and provided horticultural information and gardening tips.

Gladys Swope, Slide Chairman, kept track of our ten slide programs which were used forty-three times, and completed a new slide program on "Wild Flowers of the Pacific Northwest."

Phyllis Morgan, plus 133 workers who put in 405 hours, made Work and Fun Day a smashing success. The Arboretum crew hauled over 3½-4 truck loads of weeds! Units who could not participate contributed almost $400.00 for maintenance.

To Foundation and Arboretum staff members and to all Unit Council and Foundation members, our thanks for helping to make our Arboretum more beautiful, and this year a banner year in educating and extending the appreciation and knowledge of our Arboretum to our members and to the community at large.

MRS. GORDON LOGAN
Unit Council General Chairman

Seeds collected by the Arboretum staff from plants in the Arboretum and wilderness areas of Washington state are catalogued and a list sent to participating members of the international seed exchange. Orders for seeds are processed and filled by Gwen Bell, Dotty Cropley and Vivian Mead, members of Unit 66, under the supervision of the staff and the tutelage of Unit 25 who have provided this valuable volunteer service for fifteen years.

SOME OF OUR FAVORITES
Won't You Send Us Yours?

Gazania splendens

Chloe T. Sivertz

The very name of this daisy-like splendor of South Africa may derive from the Greek word meaning riches. This herbaceous compositae is truly rich in color and useful as a border plant for full sun. But its drawback for northwest gardens has been that it was rated only half-hardy in our zone. The mild winter of 1974-75 gave us a wonderful bonus and a new respect for the gazanias, all of which survived in our garden.

As this is written in June, how *can* one choose a favorite plant? The memory of cherished bulbs of early spring, of the fragrance of the winter-blooming shrubs so much at home in the Pacific Northwest and now the June glory of roses, everybody's favorite — all these recollections make the choice difficult.

The gardener who has lived long in our climate observes many plants that are widely repeated in home gardens. As space becomes limited one looks for plants that have real distinction. One digs out the invasive types and one tires of the porch boxes with their inevitable red geraniums. And it must be admitted the propagation of the uncommon and the difficult becomes tempting.

Daisy types have long been a delight, leading me to observe closely any new variety. For years the Arboretum greenhouse has grown the yellow gazania that flourishes near the office. It has the usual grey-green foliage and is a useful and pretty plant, not always winter-hardy. It was a pleasure to find around a public building in central California a lavish planting of gazanias in a variety of tawny shades reminiscent of the African origin, such as we had never seen.

A California seed house supplied the seed in mixed colors: cream, yellow, orange, bronze and red with striped rays. The greenhouse grew them in 1974 for the spring sale, and thus a new favorite was realized. The flowers measure nearly four inches across, the stems about twenty inches high and the ten-inch foliage is striking grey-green backed with silver. Leaves are long and narrow, some straight-edged and some notched. An interesting evening behavior is that the flower closes and the leaves turn their silver side out, making the plant attractive even after sundown.

Thinking the original plants would not live over, we saved seed from the first planting and grew them easily in the house until May. These seedlings thrived and bloomed in July. While the seed catalog called the variety *G.* 'Sunshine,' the description in Sander's *Encyclopedia of Gardening* of *G. splendens*, which some believe to be a hybrid, most closely resembles our plants. Blooming from late May through the summer, we now know it will survive here given some protection in winter. Last winter the plants we did not cover lived through as well as those covered.

UNIT CONVERSATIONS

Exiled Victor Hugo said *"Le mois de mai sans la France ce n'est pas le mois de Mai."* The love affair between May and mankind is timeless and has given us ". . . the merry month of May . . . ," dancing around the maypole and the Unit Council Plant Sale held the first week of May at the Arboretum. One of Seattle's finest traditions, it involves hundreds of people — 545 volunteers of both sexes, this year, from a 9 year old tree-carrying cub scout to enthusiastic septuagenarians.

Our sale's committee consisted of 21 plant-connected departments entrusted to people expert in their field, be it bonsai, native materials, vines, alpines, rhododendrons, etc. . . . Our up-to-date chairmen buy ferns from Vermont, bulbs from Holland, magnolias from Oregon, roses and indoor plants from California — and anything from Aaron's Beard to *zygocactus truncatus* — to enable the indoor grower enthusiast, the balcony gardener or the estate landscaper to buy his selection in one trip.

The Donations Dept. answers calls from altruists with over crowded gardens; some material will be given already balled, some other will come bare-rooted and will have to be potted and tended; volunteers, short of stealing, will beg or borrow a truck to assemble, inventory and tag the donations, upwards of 4,000 in 1975.

Our own greenhouse propagates choice material from private gardens of from the Arboretum for the discriminate collector.

Unheralded but indispensable are the 10 "service" departments:

The head *Cashier* keeps track of 7 hand-operated tape-type cash registers (otherwise displayed as curiosities but loaned to us repeatedly) and keeps a staff of checkers and bankers very busy for 3 days. A garage is converted into a combination *snack-bar* and *bookstore*. A call to our *Personnel* section will bring a list of volunteers familiar with a department specialty. Our Poster chairman handles the design, printing and distribution of display material and our Publicity is a joint effort — our own publicity department and the Foundation's Public Relations person who secures radio time, TV coverage and newspaper space. One unit is responsible for the *"Properties"* and sets up and dismantles 200 4×8 tables, rented in part, while the *Research* Committee assembles the plant list with a short botanical description of the item.

Inventorying and preparation of greenhouse-plants require many hands. Clara Beneche and Mary Mullaney make sure that each plant is properly tagged with a label indicating it has been propagated in the Patricia Calvert Greenhouse.

One may pre-order special plants to insure availability and this year we experimented with a 5 dollar deposit requirement to do away with unavoidable "forgotten" plants. Material is brought to the well-organized *Pre-Order* section by each department (kept informed of the requests by the pre-order chairman who receives them either by mail or phone) and customers may drive to pick up their treasures. For the customer who would rather browse and shop, the *Transportation* department establishes parking area, one-way streets, shuttle-buses and puts up directional signs with the help of 2 off-duty policemen (who double as night watchmen and guards for trips to the bank) and of Mr. Art Gardiner whose name never appears officially but who gives unselfishly much of his time year after year. The last of the many smiling faces you see after the shopping spree might be the volunteers of the *Will Call* Department — who watch your purchases while you retrieve your car — who help with loading.

What about the Chairman? Appointed in June, I experienced the "What if?" syndromes. Sitting straight up in bed in the middle of the night wondering "What if the customers stay home?" "What if the weather is bad?" . . . It *had* never rained in our 28 year history. I found a good co-chairman to commiserate, to help find the staff — some are recidivists, some arms had to be twisted ever so lightly, some long time friendships have to be invoked — and to share responsibilities. One of our joint decisions was to shelve a contingency plan for rain. . . . On May 2nd, oversaturated clouds opened up to the relief of our sun-dried plants. Personnel and customers (wearing sleeveless garments one day and slickers and boots the next) mingled good-humoredly and at 5 p.m. only 5% of our purchased stock was left . . . plus some very sad looking soaked cardboard boxes.

. . . The archives have already been turned over to the 1976 Plant Sale Chairman and this is the last of a very long series of reports which had to be written, including one to the City and State fathers. My heartfelt thanks go to Sally Sue Coleman, co-chairman extraordinaire, to all department chairmen, their personnel and their understanding families, to the staff of the Arboretum, the secretaries of the Foundation, and to our friends, the many faithful customers.

JEANNINE CURRY,
1975 Sale Chairman

PS. The wet and dry money we banked during the two days amounted to $28,500.

The Thorgrimson Cup is presented yearly to the unit contributing the most to the Arboretum. The letter of application for this year's winner follows:

"Citizens of Seattle and surrounding communities should be justly proud of the Arboretum Foundation and the sponsor of the Thorgrimson Cup for promoting activities in the Arboretum.

Just ten (10) years ago this month, many of the members of our unit were contacted by an excellent East Side Representative of the Arboretum Foundation to meet and discuss our mutual gardening interests. We clicked under the wonderful tutelage of our sponsor and formed a new unit. From then on, we participated in many varied activities until now the list is most impressive.

At first, we did simple unit activities, then branched out to Work and Fun Day weeding and selling at a Plant Sale. Then all of a sudden almost everyone was involved.

The past year is an example of the many contributions these members have made.

Plant Sales wouldn't be the same without Ellen Martarano as Chairman of the Ferns, Marilyn Watts, her able assistant, Nancy Hewitt, co-chairman of House Plants and Marilyn Kolesar, Rhododendrons.

The East Side Representative has been Kathleen Woodcock.

Unit Program Chairman is Nancy Hewitt.

School Programs has Cora Gardiner in charge.

Our unit contributed a book, The Long Road Traveled *to the Bellevue Public Library.*

Marilyn Kolesar has been on the steering committee for the Rhododendron Study Group and on the nominating committee for Unit Council Officers in 1974.

A project, still to be completed this spring, is a slide study of Myrtle De Friel's Garden, "Through the Seasons of the Year" initiated by Jan Dalby and Ellen Martarano.

Each year a Christmas Auction is held and we have discovered our members to be talented not only in Garden oriented activities, but in artistic and culinary ways.

No members were acquainted until the formation of this unit, but have become very close

friends over the past 10 years.

Two members were organizers of Study Groups: House Plants by Nancy Hewitt and Rhododendrons by Marilyn Kolesar.

Several of our group are on the speakers list, Nancy Hewitt and Marilyn Kolesar; and Myrtle DeFriel and Marilyn Kolesar have their gardens on the Tour list.

On this our 10th anniversary together we would like to honor our name-sake who caused all this to happen, the then East Side Representative, Myrtle De Friel and her active Unit 16 Sweet Sixteens as we were originally called. Thank you for bringing us together and molding us into active Arboretum Foundation members."

MRS. RICHARD KOLESAR
UNIT 16

Lee Clarke, General Chairman of the Arboretum Foundation Unit Council announces the following:

In hopes of making our Unit Council meetings more available to the unit membership and to encourage increased attendance at all of the four meetings, the Unit Council Governing Board has decided on a new location and format. ALL Unit Council Quarterly meetings will be held at St. Marks Episcopal Church in the Bloedel Auditorium, 1245-10th E., starting at 9:30 AM. Coffee and rolls will be served and the meeting will begin at 10:00 sharp. We urge two members of each unit plan to attend. The meetings will include reports and discussions concerning the interesting activities for the year, Joe Witt's current report on Arboretum activities, a brief program of interest for each meeting and a display of horticultural specimens. The meeting will conclude by 12:30. NO luncheon or afternoon program will follow.

ROMNEYA COULTERI — Matilija Poppy
(cover illustration)

One of the most beautiful and useful summer flowering plants for gardens in the Puget Sound area is this native of extreme southwestern California, a member of the poppy family, *Papaveraceae*, as one might easily guess after seeing a flower. Fortunately it is sufficiently hardy to withstand our normal winters here and even if the herbaceous parts are killed above ground the rootstock will regenerate new growth next spring. It should of course be placed in a well-drained soil and the sunniest situation available if it is to flourish and flower well, but beware of slugs attacking the young shoots in April and May.

The substantial flowers are up to five inches in width with a central boss of golden stamens one and one-half inches in diameter, tinged purple at the base. The six petals are of purest white, pleated longitudinally into numerous small folds and ridges and serrated on the margins; they are slightly but not sweetly fragrant. The effect of this golden center within a saucer of white tissue has obviously given rise to another common name besides its Californian one, namely the poached egg plant, although this may be entirely local in origin and certainly not official. If the plant is placed in front of a dark evergreen for background the effect of a dozen or more of these striking white saucers held five or six feet above the ground can be quite dramatic. As an added advantage the flowers develop in succession over a period of about six weeks, starting at the end of July. They are well complemented by the rather small glaucous green deeply cut leaves which clothe the stems.

The genus, named in 1845 for an Irish astronomer, Thomas Romney Robinson, consists of only two species, the other being *R. trichocalyx* Eastwood (1898). This is chiefly distinguished by the bristly pedicels and sepals, but it also has a more extended distribution both north and south, from Ventura Co., California into Baja, California. It is interesting to learn that *R. coulteri* was first flowered in cultivation in England exactly one hundred years ago, in 1875, and that five years later it received a First Class Certificate from the Royal Horticultural Society in London. Even after a century in our gardens it would seem that this is a plant of great value which is not being used as often as it should be.

BRIAN O. MULLIGAN

Book Reviews

PATTERNS IN NATURE, by Peter S. Stevens. Atlantic Monthly Press and Little, Brown and Company, Boston and Toronto, 1974. 240 pp., illustr. $10.00.

" . . . When we see how the branching of trees resembles the branching of arteries and the branching of rivers, how crystal grains look like soap bubbles and the plates of a tortoise's shell, how the fiddleheads of ferns, stellar galaxies, and water emptying from the bathtub spiral in a similar manner, then we cannot help but wonder why nature uses only a few kindred forms in so many different contexts. Why do meandering snakes, meandering rivers, and loops of string adopt the same pattern, and why do cracks in mud and markings on a giraffe arrange themselves like films in a froth of bubbles?"

These are not novel questions. In fact, they have intrigued man since time immemorial. Many a mathematician has devoted a lifetime to the inquiry of repetitive natural form. A good many books have been published on this theme, from the scholarly treatise of D'Arcy Thompson to more glossy, if often shallow, photography books of our time. In a sense, the theme is the legitimate domain of many, and each will bring his own bias to bear on it. And so does Stevens.

A graduate of the Harvard School of Design, he is one of those few architects who, rather than working with spaces, deal with *space*. Space is an intriguing substance. You can perceive space without seeing it. You can mold space without touching it. You can create space, yet it existed before. Space seems timeless, yet it has a history. We thirst for unlimited space while feeling secure in confinement. Stevens begins his book by examining this most fundamental and pervasive constraint of natural form, space. "The idea that space has structure may sound strange, since we usually think of space as a kind of nothingness that is the absence of structure. We think of space . . . as the passive backdrop for the lively play of all material things. It turns out, however, that the backdrop, the all-pervading nothingness, is not so passive. The nothingness has an architecture that makes real demands on things. Every form, every pattern, every existing thing pays a price for its existence by conforming to the structural dictates of space." Of course, this path of inquiry leads inevitably into Einsteinian territory since, after all, space manifests itself in one form or another in gravitation, electromagnetism, and matter. Fortunately, the author chooses to depict this area in an appealing sketch rather than in a surveyor's map and thus leaves the reader intrigued by the major features while aware of the remaining uncertainty that clouds our understanding of the physical world. Here, as elsewhere in the book, the unsaid appears deliberate and seems to enhance the said. It is curious how space makes itself felt in words, too, as well as in the absence of words.

Yet, Stevens takes a quite tangible approach to his subject. Early in the book, he lets the reader discover, as it were, that a disk of clay can assume three fundamentally different forms depending on whether the center grows slower, equal to, or faster than the perimeter. Differences in shape arise from the differential spreading of space. He lets him play with equilateral triangles so as to experience the same phenomenon with a defined geometrical unit. This makes for an easy transition to the two- and three-dimensional arrangement of elemental forms. It becomes plausible that there are five, and only five, regular convex polyhedrons, that they have been known to the ancient Greeks, and that no one will ever discover a sixth. Or that by joining regular plane figures of more than one type, one can produce fourteen, and only fourteen, semi-regular polyhedrons, barring prisms, and that they obey strict rules as to the numbers of their corners, edges, and faces.

Thus, with his eye on the constraints, the author examines such repetitive forms as spirals, meanders, explosions, branching patterns, and relates them to the underlying laws governing stress, flow, turbulence, surface tension, close packing, and least effort. He writes an engaging style and is clearly intent on developing in the reader an understanding for the basic simplicity of nature's apparent complexity. His illustrations — in a book of this sort often the essence of the publication — are striking because carefully chosen. Here again, one is impressed by the felicitous restraint the author has shown in dealing with a subject that lends an easy hand to the lavish and extravagant.

Clearly, this is a *conceptual* book, not an eye-catcher, but it is aimed at laymen as well as professional and is bound to reach them both. In fact, I find it so illuminating that I am willing to accept occasional underexposed features or organic evolution and morphogenesis as elements of accent in the overall picture rather than as shadows of neglect. If you have any one of the following faculties; an observant eye, an appreciation of design, an intuitive feeling for harmony, a grasp of the process of life, and an ability at synthesis; you will be fascinated by the book. If you possess them all, you may be annoyed for not having written it.

R. F. STETTLER
Professer of Forest Genetics

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THE ARBORETUM FOUNDATION
UNAUDITED STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS
YEAR ENDED APRIL 30, 1975*

	Combined
RECEIPTS:	
Dues	$19,802
Donations	4,972
Unit Council —	
Plant and bulb sale	40,878
Other	1,433
Interest on savings accounts and investments	52,750
Net income from Investment Trust	1,003
Advertising and miscellaneous	3,380
TOTAL RECEIPTS	124,218
DISBURSEMENTS:	
Salaries and Christmas bonus	15,772
Payroll taxes	1,459
Membership expense	155
Bulletin and publications	15,926
Publicity and educational program	1,230
Telephone	355
Other operating expenses	7,287
Unit Council expenses —	
Plant sale costs and expenses	21,449
Utilities, supplies, postage and books	558
Other	1,699
Donations to University of Washington Arboretum	16,189
Donations to Japanese Garden	1,848
Donation to Memorial Gates	1,580
TOTAL DISBURSEMENTS	85,507
Excess of receipts over disbursements for the year	38,711
CASH BALANCES, APRIL 30, 1974	571,843
ALLOCATED CASH BALANCE, APRIL 30, 1975	$610,554
ALLOCATION OF FUNDS	
General Fund	$ 17,395
O. D. Fisher Funds	699
Endowment Trust Fund Monies	699
Floral Hall Fund	127,418
Memorial Fund	18,941
Japanese Garden Fund	3,938
Educational Program — Library Fund	4,216
Tolmie Fund	378,648
Krauss Fund	58,600
FUNDS ON HAND APRIL 30, 1975	$610,554
ENDOWMENT TRUST PRINCIPAL — invested in Seattle First National Bank "Investment Funds for Trusts" units	$ 15,888

*Financial Statement as prepared by Price Waterhouse & Co. will be available in Arboretum Foundation office.

THE ARBORETUM BULLETIN

Published by the
Arboretum Foundation
University of Washington Arboretum
Seattle, Washington 98195

ADDRESS CORRECTION REQUESTED

MR. JOHN C. WISTER
735 HARVARD AVE.
SWARTHMORE COLLEGE
SWARTHMORE, PA 19081

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COMING EVENTS CALENDAR

DATE	EVENT
September	
17	Dr. Henry Marc Cathey Lecture — AMERICAN HORTICULTURAL SOCIETY: NOT FOR GARDENERS ONLY
17	Rock Garden Study Group
18	Unit Council Meeting
24	Arboretum Explorers

LOOKING AHEAD

October	
1	Bulletin Editorial Board Meeting
2	Unit Council Governing Board Meeting
6	Rhododendron Study Group
9	Foundation Executive Committee Meeting
14	House Plant Study Group
15	Rock Garden Study Group
20	Northwest Natives Study Group
22	Arboretum Explorers
November	
3	Rhododendron Study Group
5	Bulletin Editorial Board Meeting
6	Unit Council Governing Board Meeting
11	House Plant Study Group
13	Foundation Executive Committee Meeting
17	Northwest Natives Study Group
19	Rock Garden Study Group
20	Unit Council Meeting
26	Arboretum Explorers

REMEMBER

Every TUESDAY — Greenhouse Day; Every FIRST FRIDAY — Herbarium Committee; Every FOURTH WEDNESDAY — Arboretum Explorers